Dholakia, Umesh

From: Angel Berrios [Angel.Berrios@erm.com]
Sent: Thursday, March 07, 2013 9:38 AM
To: Dholakia, Umesh
Cc: beatriz.rivera@essroc.com; Steve Cullen
Subject: RE: Essroc Answer to Request for Information
Attachments: Essroc San Juan Average Heat to Produce Clinker.pdf

Umesh, the Btu/lb clinker for Essroc is in the range of 1450 - 1750 Btu/lb clinker which are the between the average used in the industry. See attached document with example of calculations for coal, biomass and used oil.

Angel

From: Dholakia, Umesh [Dholakia.Umesh@epa.gov]
Sent: Thursday, February 28, 2013 9:01 AM
To: Angel Berrios
Cc: beatriz.rivera@essroc.com; Steve Cullen
Subject: RE: Essroc Answer to Request for Information

Thanks.

What is the heat balance? That is, what is the MMBTU/ton of clinker produced number for ESSROC? Is it [1980000 MMBTU/241,000 tons]? The average is around 1800 Btu/lb of clinker.....that I have seen.

From: Angel Berrios [mailto:Angel.Berrios@erm.com]
Sent: Wednesday, February 27, 2013 6:33 PM
To: Dholakia, Umesh
Cc: beatriz.rivera@essroc.com; Steve Cullen
Subject: Essroc Answer to Request for Information

Umesh ,

The following are the answer to your questions.

The up to 35 percent of AF substitution represent the substitution of the current fuels used at Essroc. The approach that we would like to use is adding the use of a new fuel to the process.

The use of up to 70,000 tons of alternative fuel per year represent a substitution of approximately 32,000 tons of coal per year or 22,000 tons of oil. The total amount of clinker that can be produced is up to 241,305 ton of clinker per year which is below the current permitted limit.

1. Please justify ESSROC's proposed 35% (70,000 tons/year) limit with Heat Input numbers-MMBtu/year or better.

The idea is to maintain the same requirements established in the permits issued to Essroc for coal and oil. The approach used in the construction and Title V permit is to establish the amount of fuel that is need for the production of clinker. As stated above the plans are to substitute up to 35 percent of the current fuels used at the facility. The following information will provide you with the percent of substitution of fossil fuel.

Type Fuel	Total Fuel (ton/year)	Average Heat Content (MMBtu/ton)	Total Heat Input for Clinker Production (MMBTU/year)	Percent Substitution
Coal	90000	22	1980000	35%
Biomass	70000	10	700000	

Type Fuel	Total Fuel (ton/year)	Average Heat Content (MMBtu/ton)	Total Heat Input for Clinker Production (MMBTU/year)	Percent Substitution
Oil	69657	34	2368338	30%
Biomass	70000	10	700000	

2. Does ESSROC keep track of the coal, oil, and tire's heat contents?
Yes, Essroc maintain records of each batch of coal or oil received.

3. Also, ESSROC proposes to stack test to verify the emission factors used in this non-app demonstration- that is my understanding.

Yes, a stack test will be performed to verify and emission factors.
If you have any more questions please let me know.

Angel

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ESSROC SAN JUAN INC.
SAMPLE CALCULATIONS AVERAGE HEAT TO PRODUCE CLINKER

COAL: Permit limit: 90,000 tons coal/ year Average Heat Content: 22 MM Btu/ton coal

$$\frac{90000\ \text{ton coal}}{\text{year}} \times \frac{22\ \text{MM Btu}}{\text{ton coal}} = \frac{1980000\ \text{MM Btu}}{\text{year}}$$

The estimated heat to produce a pound of clinker using coal is the following:

$$\frac{1980000\ \text{MM Btu}}{\text{year}} \times \frac{\text{year}}{682550\ \text{ton clinker}} = \frac{2.90\ \text{MM Btu}}{\text{ton clinker}} \times \frac{1.00\text{E+06 Btu}}{1\ \text{MM Btu}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} = \frac{1{,}450.44\ \text{Btu}}{\text{lb clinker}}$$

BIOMASS: Permit Limit Request: 70,000 tons biomass/year Average Heat Content: 10 MM Btu/ton biomass

$$\frac{70000\ \text{ton biomass}}{\text{year}} \times \frac{10\ \text{MM Btu}}{\text{ton biomasa}} = \frac{700000\ \text{MM Btu}}{\text{year}}$$

The estimated heat to produce a pound of clinker using biomass is the following:

$$\frac{700000\ \text{MM Btu}}{\text{year}} \times \frac{\text{year}}{241305\ \text{ton clinker}} = \frac{2.90\ \text{MM Btu}}{\text{ton clinker}} \times \frac{1.00\text{E+06 Btu}}{1\ \text{MM Btu}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} = \frac{1{,}450.45\ \text{Btu}}{\text{lb clinker}}$$

Used Oil: Permit Limit: 69657 tons of Used Oil/year Average Heat Content: 34MM Btu/ton Used Oil

$$\frac{69657\ \text{tons used oil}}{\text{year}} \times \frac{34\ \text{MM Btu}}{\text{ton biomasa}} = \frac{2368338\ \text{MM Btu}}{\text{year}}$$

The estimated heat to produce a pound of clinker using used oil is the following:

$$\frac{2368338\ \text{MM Btu}}{\text{year}} \times \frac{\text{year}}{682550\ \text{ton clinker}} = \frac{3.47\ \text{MM Btu}}{\text{ton clinker}} \times \frac{1.00\text{E+06 Btu}}{1\ \text{MM Btu}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} = \frac{1{,}734.92\ \text{Btu}}{\text{lb clinker}}$$